



Strategic Minerals & The Energy Transition

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Syllabus Connection: GS Paper III (Economy, Infrastructure, and Mineral Resources)

Contemporary News Pivot

In late 2025, the global race for **Rare-Earth Elements (REEs)** has intensified as India targets a 500 GW non-fossil fuel capacity by 2030. The Ministry of Mines recently highlighted that India's demand for permanent magnets—made from REEs—is set to double by 2030, necessitating a shift from raw extraction to high-end refining.

Geopolitical & Economic Dimensions

- **The "Lantanide" Inventory:** REEs consist of 17 elements (15 Lanthanides plus Scandium and Yttrium). Despite the name "Rare," they are relatively abundant in the earth's crust but difficult to extract and refine in pure forms due to their chemical similarity.
- **The Refining Bottleneck:** While India holds approximately **6.9 million tonnes** of reserves (mostly in monazite sands), China controls over **90% of global refining**. For UPSC, distinguish between "Mining" and "Processing"; the latter is the true strategic vulnerability for India.
- **National Security Impact:** REEs are indispensable for precision-guided munitions, night-vision goggles, and stealth technology in defense, as well as Permanent Magnets for Electric Vehicle (EV) motors and wind turbines.